

or accelerated, started or stopped, by substances which they secrete, and which are carried from one organ to another through the blood stream, chemical messengers,—a wonderfully interesting field for study.

Again, that most highly specialized group of cells composing the nervous system, regulates and controls, within certain limits, all of these groups of cells, and all of the other cells of the body, except those leading a free and independent existence in the blood stream and among the fixed cells of the organs, the various corpuscles of the blood.

Some of these corpuscles, like the polynuclear and the mononuclear leukocytes, are very slightly differentiated and resemble very closely many of the amebe found in our streams and ponds and the free waters of the globe. These cells feed upon dead leukocytes, dead tissue cells and organisms, pathogenic and non-pathogenic, gaining entrance to the blood stream, or penetrating the protecting layer of cells forming the skin and mucous membranes. They constitute a mobile army marshaling itself to any point needing defense against invading pathogenic organisms. They are endowed, like all cells, with weapons of offense and defense. They manufacture chemical substances capable of poisoning many pathogenic cells, and others, enzymes, which digest them. They also elaborate substances, capable, to a certain degree, of neutralizing, and rendering harmless, the toxins and enzymes, or weapons of offense and defense, of disease germs; namely, antitoxines and antienzymes.

The fixed cells of the body have, in varying degree, these same weapons of offense and defense. Because of the special functions which they have been called upon to perform, the fixed cells have relinquished many of the functions of cells living in a free state. They are dependent for their continued existence, and condition of health, upon the complex processes taking place in this community of living individuals.

It has long been observed that various disease germs attack, as a rule, certain tissues, the other tissues being immune. For instance, the diphtheria bacillus is confined to the upper respiratory tract, the typhoid bacillus to certain glands in the intestine, the gonococcus to the anterior urethra in the male, the pneumococcus to the alveoli of the lung. Under certain conditions, which are worthy of much study, these germs are able to maintain an existence among various other tissues of the body.

This peculiar vulnerability of certain tissues is further illustrated in facial erysipelas. Here we have a strain of streptococci usually commencing their depredations in the skin about the bridge of the nose, or inner canthus of the eye, and being confined to the region of the face and scalp.

Certain tissues have acquired a degree of immunity against organisms prone to attack them. As an instance, the surgeon invades the rectum, the bladder and the urethra, and offers many indignities to the tissues in the presence of various pathogenic organisms, with comparative impunity. The same operative traumatism in other tissues, under like conditions for infection, would be followed by

dire results. The same holds good in connection with the other end of the alimentary canal, and the upper air passages.

Man protects himself from vicious and dangerous wild beasts by means of his superior intelligence. He does not even require the aid of much scientific knowledge for success. Empirical knowledge is sufficient. Recently, a celebrated American hunter, "Buffalo" Jones, and his cowboy companions, armed simply with lariats, have been able to overcome the African lion, the king of beasts. But not until much accurate, scientific, correlated knowledge had been acquired, recorded and disseminated, was man able to defend himself individually and collectively against the terrible and deadly horde of microscopic foes surrounding him. Even to-day, lack of intelligence, and the dissemination of this knowledge, is resulting in the destruction of thousands in China by a unicellular organism which has been kept within due bounds on this coast.

For countless ages there has existed an unceasing conflict between the various forms of microscopic life. This conflict is maintained in the culture fluids of the laboratory. It is seen in the septic-tank, instituted for sanitary purposes. The agriculturist finds that the amebe in his soil destroy the bacteria which help to make food for his crops. It is probable that every kind of unicellular organism has acquired, during these ages of strife, weapons of offense and defense. The weapons of offense are toxins, extra-cellular and intra-cellular, together with enzymes. The toxins to poison, the enzymes to digest, liquefy and thus annihilate the foe.

Study of unicellular organisms has entirely changed our conceptions of heredity, because the transmission of acquired characteristics is here very common and observed by everybody.

The subject of immunity, of inflammation, of repair and of regeneration, are matters of physiology and pathology of the cell.

The cells of the nervous system, the most highly differentiated of any in the body, have two functions. They regulate and control, within certain limits, the vital processes of the groups of cells, called organs, the internal economy of the body, and they adjust the organism as a whole to its environment. The cells of the brain stand in direct relationship to one of the most marvelous conditions confronting us in the universe; namely, consciousness. Through these wonderful brain cells, matter and force become aware of their existence.

INTESTINAL HEMORRHAGE IN HERNIA.*

By REXWALD BROWN, M. D., Santa Barbara.

The matter of hernia, simple and complicated, has given rise to such a wealth of literature that it is largely commonplace to present the subject to a body of medical men. It seems hardly possible to add material of moment to the numerous type cases considered from any of the angles, clinical, diagnostic, pathological, and therapeutic. This may be true—our errors lie in assuming that every case

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can be made to fit into some one of the type cases—in not recognizing that certain cases present wide variations from the usual. Through this loop-hole, this mental inertia, this habit of thought which does not carefully analyze every clinical feature in connection with each new hernia problem creeps the mortality in some one or more cases wherein the surgical management has been altogether satisfactory to the operator, and a happy convalescence is expected.

My purpose in the following history is to picture one of the variants and to call attention to a clinical feature which may suggest formidable complication in what otherwise are hernias of supposedly minor concern.

Mr. W. J. R., age 54, was brought to Santa Barbara by Dr. F. A. Brown of Lompoc on November 21st last. I did not see patient until within one hour of the operation on the following morning. Dr. Brown gave this history of the case: November 9, Mr. R. suffered with several attacks of paroxysmal pain which appeared to originate in and below a tumor mass occupying the right inguinal canal—the pain radiated throughout lower part of abdomen. Examination revealed general abdominal tenderness and tympany. There was no temperature. Vomiting had occurred once. Treatment consisted of hot stupes to abdomen and high injections. Pain slowly grew less intense and finally disappeared altogether after an attack of profuse vomiting. The vomitus contained much "coffee grounds" material which the doctor did not see but which he believed to be blood. From this time till date of operation Mr. R. had no more pain or tenderness, abdomen became soft and bowels moved daily and freely. Dr. Brown's diagnosis was ulceration of the bowel as a complication of a right inguinal hernia. To avoid possible future strangulation he had advised radical operation for the cure of this hernia and also for a large scrotal hernia from the left inguinal canal, present ten years and always reducible.

Previous History.—There had been several attacks similar to above during past year, readily relieved by tablets of unknown composition prescribed by another doctor—no history of vomiting of blood, however. The tumor mass in right inguinal canal had been present for about six years, had grown little in size and had never been reducible.

Mr. R. as I saw him for the short time before the operation appeared much emaciated. He thought he had lost twenty or twenty-five pounds within the last two months. Examination of the mass in the right inguinal canal found it to be of hen's egg size, very hard and occupying area over external abdominal ring. It did not extend toward internal ring and gave no impulse on coughing. There was no special fullness in femoral canal and no impulse. Examination of the abdomen revealed slight tenderness in right iliac fossa, and tenderness and slight rigidity in epigastrium. I felt Mr. R. was a very sick man—not altogether due to hernia but more perhaps from a hitherto unsuspected carcinoma of the pylorus—the emesis of blood, if such it were, I inferred had come from this. The sharp abdominal pains in the iliac fossa I concluded were appendiceal colics and had in some way, reflexly perhaps, aggravated the supposed carcinoma. I did not believe the mass in the right inguinal canal was a hernia—thought it probably a benign tumor. However, I concluded to attack it first, inasmuch as its removal would be a short and simple procedure. And if the tumor were of no import, I could immediately do a laparotomy for the graver condition or conditions.

The incision over the tumor mass quickly dispelled my beliefs. We were dealing with a large omental mass, very hard and fibrous, and covered with only a filmy peritoneal coat. This omental mass lay pressed into the external inguinal ring, having ridden over Poupart's ligament from the femoral opening, ob-

literating the tissues forming the anterior wall of the femoral canal. In the center of the omental mass and wholly capped by it was a knuckle of small bowel, a loop of some three inches in length. Both the inner surface of omentum and the bowel showed recent inflammatory attacks—and these were adherent to each other at several points. There were several small black areas on the bowel, especially near the turning of the loop where it was angulated almost to obstruction—a Richter hernia. The adhesions were fairly easily loosened except at the angulation where the bowel tore rather deeply as it was freed, necessitating its repair with linen suture. The femoral opening was very large and there was no constriction of bowel or sac at this point. A large part of the omentum was resected, and the remainder and the loop of bowel were separately returned to the abdomen without difficulty, and the usual repair done of the femoral opening. On the left side the Andrews imbrication method was carried out.

Apparently the operation was wholly satisfactory. An inflamed loop of bowel had been properly dealt with and the pathology explained the abdominal pain in the right lower quadrant. During patient's recovery from the anesthesia he vomited at least one quart of decomposed blood, justifying the belief that the emesis of November 9 also contained blood. I could not convince myself that the conditions in the hernia were responsible for so great an amount of bleeding. If so, why did not the blood appear macroscopically in the bowel movements rather than from the stomach? The bowels moved the day after operation by enema and the feces were of normal color. I still inclined toward an ulcerating carcinoma of stomach, possibly a small one on the posterior wall, as within a week vomiting occurred two and three times a day, vomitus almost always containing a small amount of blood. Patient lost his appetite, complained of pain in epigastrium and again in right iliac fossa. There was marked tenderness in these areas. The bowels continued to move daily, and blood, microscopically and then macroscopically appeared. There was no temperature at any time. The hernia wounds healed per primum.

Conditions rapidly grew worse and on December 9 I opened the abdomen above the umbilicus and found absolutely no signs of carcinoma. There was a long dense adhesion running from some point to left of median line above umbilicus to abdominal wall near gall-bladder—intestines adjacent were bluish-black, distended and showed small areas of necrosis—no constriction discoverable. These conditions explained the epigastric pain and tenderness. Adhesion was severed and incision closed.

An opening was then made through the right rectus muscle below the navel. The cause of bleeding and pain was at once evident. Some four or five feet of small bowel were densely adherent to each other, and to the walls of the pelvis on the right side, particularly about right femoral opening. That section of bowel which had been in the hernial sac was readily recognized as part of the bowel involved. There were numerous angulations and constrictions causing partial obstruction of the lumen. The blood supply to this area was so helplessly interfered with by the pathological changes that the bowel walls were thin, friable, and showed many spots of ulceration and necrosis. I endeavored to separate that part of the bowel adherent near the femoral ring, but despite my careful efforts a large hole was torn in the friable tissue which was found impossible to repair. I then resected the diseased bowel and united the proximal and distal ends by Murphy button. Patient died ten hours later.

In this case the findings in the first operation, though unexpected, presented no unusual features. Pathology seemed localized to a small loop of bowel and its surrounding omentum, neither of which were constricted at the femoral ring. Inflammatory changes seemed to account fully for the recurring

paroxysmal pains below the inguinal canal and for the tenderness in the inguinal mass. Nothing more appeared necessary than the severing of adhesions, the straightening out of the kink, and the replacement within the abdomen of the freed bowel—ordinary procedures. We fitted the whole matter into one of our type pigeon-holes, and did not recognize the significance of that feature which should have prevented its misplacement—the hemorrhage from the stomach.

In recent years increasing attention has been given to changes which not infrequently occur in the intra-abdominal loops joining herniated loops of intestine. These changes are nutritional in nature and are probably continuous with or dependent on alterations in the herniated bowel, produced by repeated inflammatory attacks. In these cases there is local peritonitis, of the chronic adhesive variety, within the abdomen in the vicinity of the hernial ring. There are produced organic unions between various coils, causing constrictions and angulations of the lumen, and seriously interfering with blood supply both in the coils and in the mesentery. Congestions, thromboses, ecchymoses and local anemias lead finally to bowel ulcerations and necroses with attendant bleeding or perforations.

Hemorrhage then, from the stomach or rectum in a patient who has had a hernia for some considerable period of time, with a history of several attacks of pain in the hernial tumefaction, no matter how slight, justifies the consideration of the hernia and its environs as of major importance in a differential analysis as to the source of the blood. I wish to emphasize this point because I do not find in text-books and other literature reference to the matter. During operation, if the conditions within the sac do not satisfy as to the origin of bleeding, and the adjacent intestines cannot readily be inspected through the hernia incision, an immediate exploratory celiotomy is indicated.

Discussion.

Dr. Stanley Stillman, San Francisco: I remember the case of a young man of about 20 years who was brought to the hospital with a small inguinal hernia the size of a hazel nut. He was brought in in the evening with severe pain and vomiting, but the hernia was so small and so recent that I thought spontaneous reduction would take place. He was put to bed with the foot of the bed raised and thighs flexed, and was given opium and belladonna and a warm compress over the hernia. The hernia was so tense that no attempt at taxis was made. The following morning, the conditions remaining the same, he was taken to the operating-room, but died on the operating-table before the operation was begun. Post-mortem, done almost immediately after death showed a small Littre's hernia of the small bowel, and within the bowel at this point a considerable quantity of clotted blood—evidently a recent hemorrhage. The quantity was not sufficient to have caused death, and the cause of the man's death I do not know. He ceased breathing without warning just as the ether inhaler was being adjusted over his face and could not be revived by artificial respiration. There were no lesions of the heart or lungs.

THE SKIN AS INFLUENCED BY THE THYROID GLAND.*

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That the thyroid gland has an important influence on metabolism is an accepted fact. The exact manner in which this influence is regulated is at present unknown, although there are more or less complex theories involving a consideration of possible relationships between the various ductless glands advanced by different investigators. The assumption that the thyroid performs its functions largely if not entirely by means of an internal secretion is supported by much data evolved through long series of careful clinical observations and animal experimentation. As the skin is greatly affected by the activities of the thyroid this phase of the question was chosen for the present discussion. This paper represents an attempt to present in a suggestive way, and as briefly as possible, a consideration of these effects so far as definitely known, and to discuss some phases which seem to offer possibilities in the therapy of some obstinate dermatologic conditions of obscure etiology. The writer has consulted many authors in gathering the facts to follow, and he humbly presents also a few personal observations.

There are certain well-known conditions in the skin associated with thyroid disturbances which it is necessary to review before discussing therapeutic possibilities. Since the early days of thyroid medication this gland substance has been used more or less empirically in dermatologic practice, but its indications gradually have become better known and consequently its intelligent use is more often followed by favorable results.

The cutaneous manifestations associated with thyroid deficiency or hypothyroidism will be considered first. In this condition the skin presents certain definite characteristics and from the evidence it appears that the deficiency in the thyroid secretion is directly responsible for this state of affairs. First in importance is the well known myxedema in which condition there is a generalized subcutaneous infiltration of a mucus-like substance; the skin is dry, rough and thickened. This mucoid edema is later replaced by overdevelopment of the connective tissue. The skin may be scaly and the hair which is dry and brittle, often falls out. The scalp is often dry and scaly. This generalized thickening of the skin is associated with great depression of the function of perspiration. The general nutrition of the skin and its appendages is below normal. The patients prefer hot weather and warm clothing. There may be localized thickening of the nose and lips and the face may be bloated. Rarely is increased pigmentation observed.

Ichthyosis has been seen in patients showing hypothyroidism, and that the latter condition may often be an underlying cause is strongly suggested by the fact that amelioration and cure have followed the giving of thyroid substance. A recent case reported by Mouriquand (Soc. de Med. de Lyon, Jan. 10, 1910, p. 288) is of interest in this connection: An

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